AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method comprising:

a) applying a silicone die attach adhesive composition to a substrate,

b) curing the die attach adhesive composition to form a die attach adhesive,

c) plasma treating a surface of the die attach adhesive,

d) plasma treating a surface of a semiconductor die,

e) contacting the plasma treated surface of the semiconductor die with the plasma treated surface of the die attach adhesive,

f) wire bonding the semiconductor die to the substrate,

g) injection molding a curable liquid silicone composition over the product of step f), where the silicone composition fills voids in the wire bonded semiconductor die and forms a hermetic seal over the substrate, thereby protecting it from environmental exposure, and optionally

h) forming solder balls on a surface of the substrate opposite the die attach adhesive;

where step g) comprises

i) placing the product of step f) in an open mold,

ii) closing the mold to form a mold cavity by applying a clamping ~~form~~ force of 1 to 80 tonnes,

iii) heating the mold cavity,

iv) injection molding the curable liquid silicone composition into the mold cavity to overmold the semiconductor die on the substrate, wherein step iv) is carried out at an injection speed sufficient to provide a pressure in the mold cavity ranging from 0.3 to 7 megaPascals,

v) opening the mold and removing the product of step iv), and

optionally vi) post-curing the product of step v)

wherein the silicone die attach adhesive composition and the curable liquid silicone composition for liquid injection molding have similar cure mechanisms such that

groups reactive with the curable liquid silicone composition for liquid injection molding are present in the die attach adhesive.

2 – 3. (Canceled).

4. (Previously Presented) The method of claim 1, where the silicone composition cures to form an over mold having a modulus of 25 to 1,000 megaPascals, and where the silicone composition has a viscosity of 80 to 3000 Poise and a curing profile such that the silicone composition cures in 30 to 120 seconds at a temperature of 80 to 240 °C.

5. (Canceled).

6. (Canceled).

7. (Currently amended) A method comprising:

i) placing a semiconductor device in an open mold where the semiconductor device comprises a substrate, a die attach adhesive, and a semiconductor die, wherein the semiconductor die is attached to a surface of the substrate through the die attach adhesive, and where the semiconductor die is wire bonded to the surface of the substrate,

ii) closing the mold to form a mold cavity by applying a clamping force of 1 to 80 tonnes,

iii) heating the mold cavity,

iv) injection molding an addition reaction curable liquid silicone composition into the mold cavity to overmold the semiconductor device, wherein step iv) is carried out at an injection speed sufficient to provide a pressure in the mold cavity ranging from 0.3 to 7.0 megaPascals and the silicone composition comes in direct contact with the wire used for wire bonding,

v) opening the mold and removing the product of step iv), and optionally

vi) post-curing the product of step v);

with the provisos that the silicone composition has a viscosity of 80 to 3000 Poise, and a cured product of the silicone composition has a modulus of 100 to 1,000 megaPascals.

8. (Canceled)

9. (Original) The method of claim 7, where step ii) is carried out by applying a clamping force of 1 to 27 tons.

10. (Previously Presented) The method of claim 7, where the silicone composition forms an optically clear material upon cure.

11. (Original) The method of claim 7, where step iii) is performed at a temperature of 80 to 180 °C.

12. (Original) The method of claim 7, wherein step iv) is carried out at an injection speed sufficient to provide a pressure of 0.6 to 2.0 MPa force in the mold cavity.

13. (Cancelled).

14. (Cancelled).

15. (Currently Amended) A method comprising:

a) applying a silicone die attach adhesive composition to a substrate,

b) attaching a semiconductor die to the die attach adhesive composition,

c) curing the die attach adhesive composition to form a die attach adhesive,

optionally d) wire bonding the semiconductor die to the substrate, and

e) injection molding a curable liquid silicone composition over the semiconductor device formed as the product of step c) or step d), wherein injection molding is carried out by a method comprising

i) placing the semiconductor device in an open mold,

ii) closing the mold to form a mold cavity by applying a clamping force of 1 to 80 tonnes,

iii) heating the mold cavity,

iv) injection molding the curable liquid silicone composition into the mold cavity to overmold the semiconductor device, wherein step iv) is carried out at an injection speed sufficient to provide a pressure in the mold cavity ranging from 0.3 to 7 megaPascals,

v) opening the mold and removing the product of step iv), and

optionally vi) post-curing the product of step v);

wherein the die attach adhesive composition is a silicone die attach adhesive composition, and wherein the silicone die attach adhesive composition and the curable liquid silicone composition for liquid injection molding have similar cure mechanisms such that groups reactive with the curable liquid silicone composition for liquid injection molding are present in the die attach adhesive,

with the provisos that the curable liquid silicone composition has a viscosity of 80 to 3000 Poise, and a cured product of the curable liquid silicone composition has a modulus of 100 to 1,000 megaPascals.

16. (Currently amended) A method comprising:

a) attaching a semiconductor die to a substrate to form a semiconductor device comprising a substrate, a die attach adhesive, and a semiconductor die, wherein the semiconductor die is attached to a surface of the substrate through the die attach adhesive, and where the semiconductor die is wire bonded to the surface of the substrate, and

b) injection molding an addition reaction curable liquid silicone composition over the semiconductor device by a method comprising

i) placing the semiconductor device in an open mold,

ii) closing the mold to form a mold cavity by applying a clamping force of 1 to 80 tonnes,

iii) heating the mold cavity,

iv) injection molding the addition reaction curable liquid silicone composition into the mold cavity to overmold the semiconductor device, wherein step iv) is carried out at an injection speed sufficient to provide a pressure in the mold cavity ranging from 0.3 to 7 megaPascals, wherein the silicone composition comes in direct contact with the wire used for wire bonding,

v) opening the mold and removing the product of step iv), and

optionally vi) post-curing the product of step v);

with the provisos that the silicone composition has a viscosity of 80 to 3000 Poise, and a cured product of the silicone composition has a modulus of 100 to 1,000 megaPascals.

17. – 18. (Canceled)

19. (Previously presented) The method of claim 1, wherein the curable liquid has a cure speed of from 30 to 60 seconds at 80 to 150 °C.

20. (Previously presented) The method of claim 1, wherein the mold has a gate configured to introduce the curable liquid into the mold cavity onto a middle of a top of the product of step f) in the mold cavity.

21. – 23. (Canceled)

24. (previously presented) The method of claim 15, wherein the mold has a gate configured to introduce the curable liquid into the mold cavity at a side corner of the product of step c) or step d) in the mold cavity.